CALFED Bay-Delta Program Independent Science Board

August 14–15, 2005 Meeting Summary

Action Items

1. Meyer to draft a memo regarding how the ERP implementing agencies are utilizing science to inform decision-making including the grant/project selection process. The response to the memo will inform the ISB's recommendations regarding the ERP Science Board.
2. Delta Vision. Staff to post handouts presented at the ISB meeting by Kamyar Guivetchi, DWR, to the ISB webpage.
3. Conflict of Interest (COI) Disclosures.
   - Staff to draft COI disclosures based on statements made in the meeting and distribute to individual ISB members.
   - Members to review and return revised COI disclosures to staff.
   - Staff to finalize and post COI disclosures to ISB webpage.
   - Members to notify staff whenever new COI disclosures arise.
4. Operating Guidelines. Staff to revise based on language determined in the meeting, submit revision to ISB chairs for approval, and post to ISB webpage.
5. DRMS Peer Review.
   - Chairs to draft memo to DWR recommending approach to peer review of DRMS products. Chairs will final the ISB memo and submit to staff for posting.
   - Recommend not to petition NRC for peer review.
   - Recommend Science Program (SP) to convene an Independent Review Panel to review Phase 1 and Phase 2 reports.
   - SP staff to develop a clear charge and timeline for Review Panel.
   - Recommend the DRMS team provide one or two updates to Panel members prior to review of the Phase 1 report.
   - ISB members to provide names for nominees to the Panel to Mount. Preference is for multi-disciplinary candidates.

- Staff to notify ISB members when DRMS "white papers" (proposed work plans) are available to read for informational purposes only.

6. State of Science for the Bay-Delta System Report.
   - ISB to review this document at November meeting.
   - All ISB members to be available to staff to provide guidance and answer questions.
   - Mount, Meyer, Twiss, and Healey to provide guidance to staff on report as needed.
   - NOTES:
     - Meeting summary outlines ISB recommendations.
     - ISB agrees this document should be a "living" document that will be expanded and revised on a regular basis (every two years was suggested).
     - ISB recommends SP staff focus on the body of the report (rather than the Executive Summary or the Technical Appendices) initially. Staff to provide updated material for review at November ISB meeting. This material could be an expanded outline or a first draft.
     - ISB is concerned about timeline for production of this document. Therefore, they suggest that when a choice must be made between good science and completeness of coverage, good science should prevail.
7. Indicators and Performance Measures.
   - Healey to draft a memo to CALFED implementing agencies regarding the importance of developing performance measures. Meyer to review. Letter to be sent to SP for distribution. NOTE: Memo will note that every review of CALFED focused on failure to develop performance measures.
   - Meyer to serve as primary ISB contact for performance measures.
8. Lead Scientist Recruitment.
   - Mount, Twiss, Norgaard, and Goodwin (if he chooses to continue) to serve as ISB representatives on Selection Committee.
   - Mount and Norgaard to review and edit the position description. Shouse to forward advertisement from previous search to them.
   - ISB members each to identify at least one potential candidate and discuss the position with that person. ISB members to forward names of candidates to Mount, cc Twiss and Norgaard.
   - NOTE: Selection of a Lead Scientist is critical. As a result, the Selection Committee must be nimble. Preference will be on identifying a candidate who is interested in a two-year renewable position, with the

possibility of appointing a one-year Lead Scientist on an interim basis if no two-year candidate is quickly identified.

9. Agenda for November ISB Meeting. See draft agenda below. Chairs to work with staff to finalize agenda.
10. CALFED Science Conference Attendance. Staff to follow up on covering costs for travel, hotel, and per diem for ISB member attendance at the October 23–25, 2006 Science Conference.
11. Meeting Materials. Staff to post handouts presented at the meeting (i.e., Delta Vision information) on the ISB website.

Upcoming Meeting Dates

- Nov. 16-17 (Th, Fri). 1.5-day meeting.
- Feb. 21-22, possibly also 23 (W, Th, possibly Fri). 1.5- or 2.5-day meeting. Tentative.
- May TBD.

It was noted that technology provides ways to hold group meetings with no travel, and suggested that two face-to-face meetings each year, sprinkled with several half-day teleconferences, would be equally effective. Teleconferences have to comply with the Bagley-Keene Open Meeting Act.

Draft Agenda for November 16–17, 2006 Meeting

- **Director's report**. Grindstaff will address governance of CALFED and how the ISB will engage on the issue of governance.
- **SP update**. Ott will report on Lead Scientist recruitment status.
- **PSP/ Fellows update** on recent solicitations for research grants and Sea Grant Science Fellows.
- **Ongoing Science Program-funded research** (both PSP grants and Science Fellows research). Mount will work with Ott and Hastings to put together a briefing.
- **DRMS**. ISB members may review charge for independent review panel; discuss any questions that emerge from DRMS white papers (not a review of the white papers).
- **EWA and OCAP briefing**. Out of this briefing, ISB will respond to the reviews of EWA and OCAP and how ISB fits into OCAP Biological Assessment. Will be discussed again in the February 2007 ISB meeting.
- **State of Science Report**. Staff will present a draft document for the report based on feedback given during the August 2006 ISB meeting. This will be a

working session, devoting at least two hours to discussing and approving the draft.

- **February 2007 ISB Meeting**. To be decided whether to convene for 1.5 or 2.5 days.

Meeting Materials

Handouts and copies of presentations are available on the ISB webpage at http://science.calwater.ca.gov/sci_tools/isb.shtml.

Handouts

Agenda

Handouts

- Meeting Notice.

Lead Scientist Recruitment

Handouts

- Memo: Lead Scientist Recruitment.
- Attachment 1. Lead Scientist Selection Committee.
- Attachment 2. Open Position: Lead Scientist, California Bay-Delta Authority.

DRMS

Handouts

- Memo: National Research Council Requests.
- Delta Risk Management Strategy for the Levees in the Sacramento-San Joaquin Delta. Final Draft.
- DRMS memo from Ralph Svetich, DWR.
- DRMS Scope of Work.

Presentation

- Delta Risk Management Strategy.

State of Science for the Bay-Delta System Report

Handouts

- Memo: State of Science for the Bay-Delta System Outline.

- Attachment: DRAFT Outline.

Presentations

- State of Science for the Bay-Delta System Report.
- Key decision points as an organizing principle.
- Key decision points as an organizing principle (with tetrahedron model).

10-Year Action Plan

Handouts

- 10-Year Action Plan, April 2006.

Science Program Update

Handouts

- Memo: Science Program Update.
- Science Program: Program Plan Year 7 (State FY 2006-2007; Federal FY 2007) – Draft.
- Delta Vision Process Work Plan.

Presentation

- Delta Vision Process.

Operating Guidelines

Handouts

- Independent Science Board CALFED Bay-Delta Program Draft Operating Guidelines (July 31, 2006).
- Independent Science Board CALFED Bay-Delta Program Draft Operating Guidelines (July 31, 2006) (August 9, 2006–Updated by Mount and Twiss).

Indicators and Performance Measures

Handouts

- Indicators and Performance Measures for the CALFED Bay-Delta Program.

Presentation

Slides for presentation included in above handout.

Meeting Summary, August 14, 2006

Attendance

ISB Members

Antonio Baptista
Bill Glaze
Michael Healey
Jack Keller
Daene McKinney
Judith Meyer
Jeff Mount
Richard Norgaard
Duncan Patten
Paul Smith
Bob Twiss

Absent: Peter Goodwin

ISB Member Introductions

Note: Member biographies can be found on the Independent Science Board (ISB) website at:

http://science.calwater.ca.gov/sci_tools/isb.shtml

Jeff Mount, chair of ISB, is Professor and Director of the Center for Watershed Sciences at UC Davis. He is a geologist by training, currently doing research in geomorphology, particularly large river systems, floodplains, and floodplain restoration. He served on the previous ISB.

Judy Meyer, vice-chair of ISB, is recently retired from the University of Georgia. She is a stream ecologist and has studied river and stream ecosystems, impacts of differing land uses, and urban rivers. She served on the previous ISB.

Antonio Baptista is Professor at Oregon Health and Science University and serves as Department Head for the Department of Environmental and Biomolecular Systems. He is also Director for the Center for Coastal and Land-Margin Research at OGI School of Science and Engineering at Oregon Health and Science University. His formal background is in civil engineering and applied mathematics. He is interested in observation and prediction technologies to assist in the management of complex ecosystems, particularly estuaries, rivers, and oceans.

Bill Glaze is Professor Emeritus at the University of North Carolina, Chapel Hill. He is formally trained as a chemist and evolved to focus on environmental chemistry, particularly to organic substances in aquatic systems—in the environment, in potable water, and in wastewaters—and the effects of these substances. This reflects his interest in both research and policy implications, in particular how we determine water quality, how we link monitoring efforts with models, and how these feed into decision-making.

Michael Healey is Professor at the University of British Columbia. His principal area of expertise is salmonid ecology, but he has also worked in the interface between science and resource management, particularly the development of adaptive management systems. He was a member of the Ecosystem Restoration Program Science Board (ERPSB).

Jack Keller was professor of Agriculture and Civil Engineering at Utah State University, and is also CEO of the consulting firm Keller-Bleisner Engineering. Keller-Bleisner does water resource planning and irrigation, with emphasis on techniques and technologies. He served on the first ISB and was chair of the Water Management Science Board (WMSB).

Daene McKinney is Professor of Civil and Environmental Engineering at the University of Texas at Austin. He is interested management of large river systems, especially in database and model development and application, and how this relates to negotiations over the use of water. He was previously on the WMSB and the two peer-review panels for the CALSIM water resources simulation model.

Richard (Dick) Norgaard is Professor in the Energy and Resources Group of the UC system, an interdisciplinary program not associated with a particular college. He was an early environmental economist, and founder of ecologic economics. He has studied climate change and California water, among other fields, and is interested in complex systems and bringing together scientists from multiple areas for collective understanding.

Duncan Patten is Research Professor with the University of Montana, Department of Land Resources and Environmental Sciences; affiliated faculty with the Big Sky Institute; and Professor Emeritus of Plant Biology at Arizona State University. He is a riparian wetland ecologist; his current research concerns mountain streams and wetlands and sub-alpine wetlands. His primary interests have included integrating research from large rivers; i.e., the Yellowstone River and the Glen Canyon-Colorado River systems; and the impacts of humans on natural systems. Patten served on the ERPSB and the first ISB.

Paul Smith originally worked with pond and lake pelagic systems with an emphasis on plankton, then later began working with ocean systems with an emphasis on fish larvae and eggs, and with prediction of fish recruitment using sampling systems in the Delta. He recently served on the Pelagic Organism Decline (POD) Technical Review Panel.

Bob Twiss is Professor Emeritus of Environmental Planning at UC Berkeley, interested in science-based planning and policy. He works to move science into policy. He was involved in creating the plan for the ERP, was on the ERPSB, the first ISB, and the WMSB.

Director's Update—Joe Grindstaff

Joe Grindstaff introduced John Watts, Senator Feinstein's environmental staffer, who noted that Senator Feinstein is passionate about California water issues and about CALFED.

Joe discussed the Little Hoover Commission review of the CALFED Program and the current ideas on changing the governance of the Program. He also described some of the end of Stage 1 decisions that are under consideration and efforts such as Delta Vision and the Bay-Delta Conservation Plan (BDCP). He noted that it is up to the ISB to publicize the truth, maintain a high-level perspective, and advise on key science questions to assist with management of the Program in an integrated fashion.

Public Comments

There were no public comments.

Science Program Update—Ron Ott

Ron Ott, Science Program (SP), provided an overview of SP activities, including current SP priorities, recent review panels, and requests for reviews by implementing agencies. Details can be found in the SP Update on the ISB webpage. During this update, Antonio Baptista asked some basic questions about the Bay-Delta system.

Baptista's Questions Regarding the Bay-Delta System

What do we know about the function of the Bay-Delta system?

- What are the big physical, geological, chemical and biological drivers/stressors?
- What changes in those drivers are expected into the future?

What are the big management questions?

How is the Delta currently managed?

- What agencies and responsibilities?
- To what extent is science currently involved?

What is the vision for how the Delta should be managed?

- To what extent will science be involved?

Response to Questions Regarding the Bay-Delta System

Ott noted that the State of the Science report is intended to answer many of Baptista's questions. Currently, answers can be found in various recent on-line journal articles and science panel reports but are not consolidated in one place.

Twiss noted that the ERPSB investigated conceptual models, how the system was thought to work, and stressors to the system. The ERPSB concluded that progress toward understanding the Bay-Delta system is not adequate to properly model the system. The ISB could continue to address this need for a high-level understanding of how the system works, and how the management system is superimposed on that understanding.

The Little Hoover Commission directed that CALFED's focus should be on the "Delta." Ott noted that other areas must be integrated as necessary to illuminate Delta problems. For instance, upstream actions are crucial to salmonid performance. Defining the bounds of the system is central to any analysis and solution. Mount noted that the ISB exists in part because of a political crisis—attention has turned to the Delta proper, and the ISB must respond to that attention and will spend most time and effort on this direct area. However, other areas affect the Delta and must also be considered.

Public Comments

Rhonda Reed, CALFED ERP staff, clarified the ERP's status—it has not been eliminated or subsumed by California Department of Fish and Game (CDFG), but CDFG has taken on a larger role in grant administration and leading implementation of the ERP. California Bay-Delta Authority (CBDA) staff is no longer administering grants. NOAA Fisheries (NMFS) and U.S. Fish and Wildlife Service are the other two ERP implementing agencies. For future ERP projects, the implementing agencies will develop funding recommendations, which will be submitted to the Authority, who in turn will recommend grant awards to the funding entity. Meyer expressed concern that selection panels should continue to be involved. Reed said that it is important to emphasize this perspective to the director of CDFG (the funding entity for ERP Prop 50 funds). The rigorous technical review will continue, but the ISB is not part of the review.

Reed noted that Johnnie Moore had suggested that other than the ISB, technical panels should be considered to replace the standing boards.

ISB Response

One of ISB's principal responsibilities is to make sure that work being done with CALFED funding and for CALFED meets the criteria of good science. The ISB chairs will author a memo regarding the importance of incorporating science into ERP and send it to the implementing agencies.

Delta Vision Process Work Plan

A presentation was given by Kamyar Guivetchi, California Department of Water Resources (DWR), on the Delta Vision Process. The presentation and handouts are posted on the ISB website.

Discussion

The Delta Vision effort needs a process to integrate science and the scientific community. Assuming a science panel is formed, it is unclear what process should be used to direct scientific information to the Blue Ribbon Task Force, and what information is important for that committee. Glaze noted that this type of committee does not itself include science experts and needs to receive high-level science advice. A screening device that could provide "real-time" consultation when important issues arise is crucial. The ISB cannot serve that role.

Guivetchi suggested that the ISB could help identify science advisors. Norgaard suggested that a scientist should be part of the Delta Vision Core team.

Science advisors are needed both as a technical presence at Blue Ribbon Task Force meetings, and as an independent group that can monitor the effort.

The work products of the Delta Vision effort will be important input to the State of Science report. The Delta Risk Management Strategy (DRMS) technical memoranda will be an important input for the Delta Vision report. Because several reports are due at the same time (December 2007, which will include DRMS, End of Stage 1 decisions, and other reports), any coordination of content may be difficult.

ISB Operating Guidelines/Board Member Disclosures—Ron Ott, Chris Stevens

Open Meeting Act

The ISB is subject to the Bagley-Keene Open Meeting Act. Consequently, all meetings must be open to the public.

A meeting occurs when a quorum convenes, either serially or all together to address issues within the ISB's jurisdiction.

Specific issues follow.

- **Teleconferencing.** Any teleconference must provide noticed public access at the locations where a call to the meeting is placed.

- **Subcommittees.** Subcommittees of two or fewer members do not have to meet in public.
- **Administrative issues, meeting dates.** Communications regarding purely nonsubstantive, administrative matters, such as meeting dates and times, will likely not implicate open meeting requirements.
- **Email.** Group deliberation via email (two-way communication of a quorum of members) would constitute violation of the Open Meeting Act. "Reply All" should be avoided. For reviews conducted by email, the chair will appoint one person to collect members' comments and redact them into a summary for ISB review and discussion at a public meeting.
- **Social gatherings.** The Open Meeting Act is not intended to restrict social gatherings of group members. The Attorney General warns groups not to discuss agenda items or make decisions at social meetings.

Any violations of the Open Meeting Act are subject to lawsuit. Costs and attorney's fees are incurred by the agency. The ISB need not be overly concerned about violating the act; SP staff and CBDA legal staff will provide guidance, as appropriate.

Conflict of Interest and Member Disclosures

Background

A booklet from the Attorney General's office was distributed, describing guidelines to prevent conflicts of interest.

In general, the Political Reform Act does not apply to purely advisory boards, unless there is a track record of the board's advice being "rubber-stamped" by the entity to which is provides advice. However, ISB members must be careful to comply with California Government Code Section 1090, which prevents even advisory board members from participating in the making of a contract win which the member has a financial interest. As advisors[1], for example, they cannot participate in shaping a grant agreement with the state that would financially benefit them or close associates. The law distinguishes between salaries received from public and private universities for purposes of determining financial interests.

COI Disclosures

There is a difference between an actual conflict of interest (COI)—which would necessitate recusal—and an appearance of a lack of impartiality. The federal

[1] ISB Operating Guidelines state that the ISB will not make policy decisions but rather act as advisors. Any recommendations that the ISB makes, e.g., to approve performance measures, are only a statement that they meet the test of scientific rigor; the Authority and implementing agencies would set policy.

standard for determining the latter asks whether a reasonable person familiar with the facts would question a member's impartiality.

ISB members provided disclosures of their affiliations and any possible conflicts of interest, in particular concerns about financial advantage. Member disclosures are intended to head off not only actual conflicts of interest, but also any perception of conflict of interest, such as bias or lack of impartiality, even if the circumstances do not rise to the level of actual conflicts of interest.

Member disclosures will be posted on the web and updated as necessary, at http://science.calwater.ca.gov/sci_tools/isb.shtml.

Operating Guidelines

The ISB role is to advise the CALFED Bay-Delta Program on the application of science and to assure science is used in decision-making. This may include reviewing both products and how science was used in various efforts. The ISB is not a technical review panel and will not create products.

ISB members suggested several wording changes. Amended guidelines were adopted. Fris will submit the revision to chairs for approval, then will post to the web.

Public Comments

There were no public comments.

ISB Charge/FY 07 Tasks and Schedule—Jeff Mount

ISB meetings will typically last 1.5 days, with an occasional 2.5 day meeting to accommodate working sessions.

Mount recommended that when SP staff requests guidance from the ISB, the SP staff should (1) make a recommendation—a statement or an action—that they wish the Board to approve, or alternatively (2) ask specific guidance questions, in order to narrow and streamline ISB discussions.

The ISB decided to use less paper; pre-meeting packets will be made available only in electronic form over the internet. Staff will provide hard copies of critical documents on which the ISB might need to make notes (e.g., Operating Guidelines from this meeting) at the meeting. Electronic documents will be in PDF format rather than Word for document security. A wireless LAN for ISB use is not possible for meetings at the Moss Federal Building because of security concerns.

Chairs will work with SP staff to create agendas for ISB meetings. Members are encouraged to contact the chairs with agenda suggestions.

Baptista requested periodic briefings on CALFED activities. Mount responded that these can be useful when done strategically; otherwise the ISB should focus more on action items than on briefings. When extensive briefings will be provided, the ISB meeting will be 2.5 days.

Mount will work with SP staff to make sure information is provided about ongoing CALFED Program research efforts funded by the SP and other CALFED programs.

Public Comments

There were no public comments.

National Research Council Requests—Dave Mraz, DWR

Delta Risk Management Strategy Need for Science Panel

The DRMS effort is a fast-paced study of potential risks to the Delta. This effort affects all areas of CALFED. It will be high profile and needs a correspondingly rigorous scientific review to be credible and thus well received. The DRMS presentation and handouts are posted on the ISB webpage.

ISB Response

ISB responded that review of the DRMS effort is important. If the timeline is compressed too much (and perhaps it already is), there may be too little time for reviewers to become adequately acquainted with the material. It is unclear whether the request is for an advisory or review science panel. If both are convened, there should be no overlap in membership. Because the technical advisory committee (TAC) is already involved in an advisory role, perhaps there is no need for further science advising.

The white papers (proposed work plans) are part of Phase 1. Mraz noted that the TAC members have reviewed white papers already. While review comments from TAC and other identified experts may not be incorporated into revisions of the white papers, they will be reflected in the final technical memoranda. ISB members noted that because reviews of white papers exist, there might be greater need for better integration and synthesis, rather than for additional review. Rather than a National Research Council review, the ISB recommended that the

Science Program work with DRMS agency staff to put together an independent review panel. Details of the ISB recommendation are contained in a letter from the ISB to DWR (available at http://science.calwater.ca.gov/sci_tools/isb.shtml).

Twiss recused himself from the above discussion because he is a member of the DRMS Steering Committee, and did not participate in the vote concerning ISB recommendations.

Public Comments

There were no public comments.

August 15, 2006

Attendance

ISB Members

Antonio Baptista
Bill Glaze
Michael Healey
Jack Keller
Daene McKinney
Judith Meyer
Jeff Mount
Richard Norgaard
Duncan Patten
Paul Smith
Bob Twiss

Absent: Peter Goodwin

State of Science for the Bay-Delta System Report—Lauren Hastings

Summary

In response to a request from the SP, the ISB provided input about the State of Science for the Bay-Delta System report.

Background

A report on the state of science for the Bay–Delta system has been anticipated since inception of the CALFED Program. The Record of Decision (ROD) required that such an assessment be written, and recent legislation (trailer bill 1803) renews the call for its completion. The SP has responsibility for developing this document.

The SP sees this report as an important vessel for communication; it intends to report on the state of science of the Bay-Delta system both within and outside the CALFED Program. The report is intended to be an independent, unbiased assessment. The SP also sees this report as a living document that will be updated every other year.

The SP will coordinate and oversee creation of this document. Some material will be created by SP staff, but much will be created by external experts.

Grindstaff has requested that a version of the report be available as a companion to the End of Phase 1 report (December 2007). Because of the short timeframe, the first edition must be appropriately focused. The first edition could be issued in advance of the End of Phase 1 report and associated documents in order to serve as a resource for development of those documents, or the first edition could be issued after the End of Phase 1 report in order to take advantage of new

knowledge emerging in conjunction with the End of Phase 1 report, such as the DRMS effort.

The SP would like the ISB to be the review body for this report. It also requests guidance throughout the process on approach. In particular, the SP currently would like feedback on what material should be included in the first edition and in subsequent editions.

Key Questions

SP staff discussed how the following questions raised earlier by Baptista (see *Science Program Update* above) in the ISB meeting will be addressed in the State of Science report.

- State of scientific knowledge. **How does the system work?** This discussion will identify key drivers of the system, address interrelationships to avoid "silo"-ing, and ensure that what is presented is related to major management and policy questions.
- State of the system. **How is the Bay-Delta system doing?** Indicators and trends will be central to this discussion.
- Future changing forces and how might they affect the system. **What are the key certainties that will affect the system? What are the uncertainties?** This will be important to inform future research efforts.

Scientific review of CALFED program implementation is not currently envisioned as part of the report. Implementing agencies, not the CALFED SP, have responsibility for development of performance measures. SP will coordinate and support this effort but will not develop them.

Audience and Purpose

The State of Science report is designed for multiple audiences. Different parts of the report will address their varying needs.

- High-level decision-makers, such as the governor, agency secretaries, the legislature, and Congress. The executive summary targets this audience.
- Decision-makers and agency managers who know the system, such as water operators, levee maintainers. The main document targets this audience.
- Technical specialists, such as scientists in agencies and the academic setting. The technical appendices target this audience.

Sources of Material

The SP staff, as coordinators of this document, will have responsibility to determine the sources. Much of the information about the Bay–Delta system is cutting-edge. Decision-makers are interested in emerging science, but the SP must help clarify how to use this new material in conjunction with peer-reviewed material.

Following are some possible sources of information to include in the State of Science report:

- Peer-reviewed literature including the on-line journal San Francisco Estuary and Watershed Science.
- CALFED Science Conference scheduled for October 2006.
- Independent review panels (such as for EWA).
- Agency reports.
- *Science in Action* reports from the SP.
- Workshops.

The SP proposes to develop interim products based on the above sources to distribute scientific knowledge in a timely manner and to a widespread audience.

The SP proposes that the technical appendices be prepared before the main report because much of the information is already available; e.g., many CALFED white papers have been published in its online journal; the salmonid report is due this fall. The current plan is to have the draft technical appendices complete by April 2007, with subsequent external peer review. Final version of technical appendices would be available in July 2007. The draft main report would be submitted to the ISB for their review between April and August 2007, with the final report available between October and December 2007.

Authors of the technical appendices include science experts, SP advisors, and SP staff.

ISB Response

Several ISB members noted that the proposed State of Science report, given the proposed deadline, was too encompassing. It is more important that the report be of high quality than that it have broad coverage, especially considering that it is intended as a living document to be updated every two years.[2] It is also important that the report appear in a timely fashion, so its scope should be constrained. The report should do what science does, which is to reduce the level of uncertainty of knowledge, rather than appear to be a collection of certain facts.

[2] It was suggested that the report be electronic rather than paper in format, with live links to external sources of data.

This role of science—reducing rather than eliminating uncertainty—should be made clear to decision-makers who use the document.

There was discussion about whether the report should be tightly organized around CALFED and agency decisions and priorities (which would make the report more immediately useful) or around science in a more general sense—i.e., how the Bay-Delta system works—in a way that would serve policy needs (and which would yield a document with a longer useful life). Twiss developed two versions of a figure intended to demonstrate how the Delta Vision could be used as an organizing principle for the report (Key Decision Points as an Organizing Principle [see http://science.calwater.ca.gov/sci_tools/isb.shtml]). It was ultimately decided that the report not be tightly organized around immediate CALFED and agency decisions and priorities.

This is a crucial time in the history of water decisions in California; decisions made in the next few years will likely set the future for the next several decades. The hope is that the science that is produced here will (1) influence what decisions are made and (2) predict consequences of decisions. The SP needs a decision-support tool based on science. While such a purpose is outside the scope of the State of Science report, it can lay the groundwork for development of such a tool.

Integration

CALFED programs have the disadvantage of compartmentalizing knowledge (levees, water quality, ecosystem restoration, etc.). An integrated approach is necessary for better policy support. It will also reveal existing gaps in knowledge. The document should include a chapter in the main document outlining how the areas interact (i.e., how Delta hydrodynamics affect exotic species; how water management decisions affect water quality). The appendices will then be meaningful in a context of integration. Note: it was suggested that the Water Management appendix be finalized and presented last so that it can build on the information in the previous appendices.

A few documents were identified that could serve as partial models for an integrated approach: an NMFS monograph (2005) about salmon at River's End, lead author Dan Bottom; the Millenium Ecosystem Assessment on global climate change.

An additional appendix that would support an integrated approach—beyond the proposed appendices—could address the drivers of system change (e.g., climate change, sea level rise, invasive species) and the science behind these issues.

Content

The SP was urged to rely on its own staff to develop the main document. A lot of information already exists and SP staff is familiar with it. Confidence levels about the state of knowledge should be included (to reveal whether it comes from a well-tested hypothesis, professional judgment, or somewhere in between).

The first edition of the report should analyze the state of science of the system (as is envisioned), not the state of the CALFED Program. It should be a description

of what is known and what is not known. This would encourage researchers to propose projects to fill the gaps. Subsequent editions should include the state of the CALFED Program.

SP staff intends to include existing conceptual models that capture the current state of knowledge. DRERIP has produced some conceptual models for species and will be developing ecosystem models for key stressors, habitats, and processes. They address the effect of the key driver on the outcome, the magnitude of the effect, what level of certainty exists around the knowledge, and predictability of the linkage.

The current draft outline does not address socioeconomic and economic drivers. This information is likely too detailed for the first edition, but should be included in subsequent editions.

The current draft also currently lacks an organizing principle. Various suggestions were made:

- Delta Vision.
- Water Management
- Implications of business as usual.
- The tetrahedron (Twiss' diagram) showing possible end member alternatives for the Delta: restored Delta, abandoned Delta, fortress Delta, and Business As Usual.
- Key upcoming decisions.

Antonio Baptista suggested the following outline:

- How the Bay-Delta system works.
- How the system is currently observed, modeled, and predicted.
- Current state of system.
- Big management questions including future changes. This would include what gaps in knowledge need to be filled to make the management decisions.

The following approach was suggested.

- There should be several audiences with several levels of final product for varying purposes (as currently proposed by the SP).
- The report should not be tightly based on agency decisions, but should rather point out how the science can be used to support decision-making.
- The document should answer the questions posed above in *Key Questions*.
- SP staff will present a draft document or extended outline at the next ISB meeting for ISB feedback. The focus will be the main document, not the technical appendices.

- Development of this document should not be driven by the Stage 1 or Stage 2 process; it is an independent report of the system, not of CALFED.

The following recommendations were made for the technical appendices.

- Add new Change appendix dealing with anticipated change and the science behind those changes.
- Present Water Management appendix last, to build on the knowledge in the other appendices.

Report Purpose

The ISB developed the following draft statement of the purpose for the State of Science report:

> A living document—that describes the Bay-Delta system and the scientific information base and tools that support decision-making—that will maintain its sustainability and its value to the state

ISB members were asked to provide edits to Mount.

Next Steps

The ISB suggested that SP staff present a first draft expanded outline at the next ISB meeting. It was also suggested that this draft include an initial list of indicators (of the Bay-Delta system; e.g., water quality indicators, reliability indicators, removal of invasive species, etc.) that will be used in the State of Science report.

Decisions

- The State of Science report is a living document that will evolve and grow over time. The first edition should not attempt to be broadly encompassing.
- SP staff should now focus on the body of the report targeted at managers (but not yet on the executive summary). The appendices will be added later. How new info is included and updated regularly is still to be determined.
- The overarching theme of the document should be integration. Integration is currently the greatest lack in the CALFED approach.
- The ISB will serve as the review body.

All ISB members will be available individually to answer SP staff questions. Healey, Twiss, Mount, and Meyers will provide guidance to staff as needed.

The State of Science report is a standing agenda item. The SP staff will present a first draft or expanded outline to the ISB for review at the November meeting.

Public Comments

There were no public comments.

Indicators and Performance Measures Update—Donna Podger

The SP reported on progress and plans for performance measures for the CALFED Program. The ISB was asked to give feedback on the framework approach and potential communication product. The presentation can be found on the ISB website.

The 10-Year Action Plan assigned responsibility to agencies to develop performance measures. An interagency committee has been convened to lead this effort. Four subgroups are doing the actual development of the performance measures: ecosystem restoration, water quality, levee system integrity, and water supply reliability. The SP will guide and support the effort.

A science review panel will evaluate proposed performance measures. Judy Meyer (ISB) will chair the science review panel; the SP hopes for one more ISB member to join this panel. The ISB has the charge to approve performance measures.

In addition to the science review panel and ISB approval of performance measures, the SP is seeking guidance from the ISB for process. In particular, they are asking for feedback on the framework and approach, ideas for communication products, and comments on whether a report-card-like product would be useful (there have been requests for such a product).

Discussion

Responsibility for Developing Performance Measures and Indicators

Performance measures (and the notable lack of them) are an ongoing topic in discussions about CALFED performance. They are an essential tool for CALFED to track progress, do meaningful self-assessment, and prioritize. Ideally, performance measures would be used to determine how to spend funds.

CALFED programs have had responsibility for developing performance measures since inception of the ROD. Originally, CALFED programs used "milestones" and targets that were defined in the ROD to measure performance. The previous CALFED director placed emphasis on performance measure development beyond the milestones and targets, but the programs made little progress. CALFED programs, in particular ERP, have found that the milestones established in the ROD are not highly effective for measuring progress or

evaluating actions. Researching the reasons for this failure would provide useful information for the next stage of performance measure development.

The ROD committed CALFED Program to developing performance measures, but the Program is lagging in its effort. The SP originally had responsibility, but the 10-Year Action Plan recently assigned responsibility for developing performance measures to the implementing agencies. There is some potential that without proper encouragement, useful performance measures might not be developed. If the agencies are not currently committing resources to this effort, the ISB has responsibility to emphasize the importance of this activity.

Because agencies are short on resources for this task, offering the task to stakeholders could be an effective way to get needed resources and meaningful input. CALFED could host a series of workshops to develop both measures and the web-based tool.

CMARP III (Comprehensive Monitoring Assessment and Research Program) is also doing work with performance measures. While CMARP III and the performance measure efforts may overlap, they do not have the same purpose. CMARP III has a strong emphasis on monitoring, whereas the CALFED SP sees monitoring and performance measures as intricately tied. There is some overlap in personnel, and it is up to the agencies to determine how these efforts interact.

Political Challenges

Performance measures should have a scientific basis, but in many cases the choice of performance measures is to a great extent a political decision.

Because a primary purpose of developing performance measures is to refine and improve management actions, one challenge is to develop a successful program of adaptive management. However, the public is impatient with long-term expenditures that are somewhat uncertain.

ISB Feedback

Framework

The framework is clear and flexible enough. However, it is likely that achieving consensus on the performance measures is not possible. Ways to address this potential stalemate are (1) to develop measures based on currently available conceptual models and begin with those and (2) for the SP to publish “strawman” performance measures for public critique.

Web-Based Communication Tool

The proposed web-based tool is effective and the organization of information is useful.

Report Card

Report cards intrinsically offer a value judgment because the thresholds for the grades imply adequacy or inadequacy. The SP wants to stay out of political discussions, but wants to evaluate objectively. If a report card approach is used, the agencies should set the grade thresholds. There are some examples for which report cards have been done well—but report cards are difficult to do well.

One serious concern is that report cards place values on performance, whereas science does not place values but simply reports objectively. If a report card is issued, it should not be represented as indicative of a scientific viewpoint.

Decisions

Development of performance measures and indicators is a critical factor to achieving a sustainable Delta. The agencies must rearrange their resources to accomplish this and uphold their responsibility for it.

See letter (at http://science.calwater.ca.gov/sci_tools/isb.shtml) from the ISB to CBDA regarding performance measures.

Meyer is the lead contact to SP staff for performance measures.

Public Comments

Serge Birk, Central Valley Project Water Association (CVPWA), which represents federal water uses, mainly agricultural and some industrial uses, noted that CVPWA has supported every funding initiative for science and provides as much support as possible to secure appropriations from federal sources to support CALFED.

Important issues for CVPWA are the following.

- Linking goals and management objectives to performance measures. The lack of discussion is a concern because this linkage is critical to evaluation.
- Stakeholder review. CVPWA's participation has been limited since the restructuring of CALFED. Since ERP has been transferred to the implementing agency, their role has been even more diminished. Indicator development should have been done at this level.
- Perception of CALFED performance. If the Program continues to be managed in the future without a suite of indicators, its actions will always be suspected of being arbitrary, and planning will be less effective.
- Regulatory guidelines provide insight into what performance measures should be.

- Report cards. If a report card is issued, the criteria must be clear. There is probably a better way to present any analysis of the Bay-Delta system. He has looked at report card produced by The Bay Institute.
- Future consideration of this issue. ISB should prioritize this item for future agenda items.

Justin Fredrickson, California Farm Bureau. He suggested that the memo be copied to legislators and the governor's office. ISB response: the ISB will take that recommendation under advisement. The legislators and governor's office will certainly learn of the memo's existence and content.

Lead Scientist Recruitment—Ron Ott

CALFED and the SP have been without an in-house Lead Scientist for more than a year. The Lead Scientist is crucial to the success of CALFED and of the role of science in CALFED. As a result, hiring or appointing a new Lead Scientist is a very high priority, and should happen as quickly as possible.

A nationwide search was conducted previously without success. This failure could be due to programmatic uncertainty of CALFED and the SP during that period. There is now more certainty—the SP will continue to exist in its current form, now under the Resources Agency. Governance legislation to abolish CBDA is unlikely to go into effect until 2008. Therefore, the Lead Scientist will report to the Authority for the next year and a half; and funding is assured for at least two years with good likelihood for funding beyond that time if Prop 84 passes this fall.

Position Description

Twiss and Norgaard will streamline and simplify the position description for use as a job advertisement (Michelle Shouse, SP, will forward the job advertisement used in the previous Lead Scientist search) and will send the one-page draft advertisement to the chair for review. Revisions will include (1) an understanding that experience in natural science includes an engineering background and (2) a statement distinguishing between required and desired qualifications.

Recruitment and Tenure of Lead Scientist

The ISB is charged with leading recruitment for the Lead Scientist, referring candidates to the Selection Committee, and making a recommendation to the CBDA Director, who would then give the recommendation to the Authority. The ISB can recommend either to hire a "permanent" Lead Scientist, who would be identified through a nationwide search and would serve for a two-year term with a possibility of a two-year contract extension; or to appoint an "interim" Lead

Scientist who could be identified through a narrower recruitment process and who would serve a shorter term. NOTE: Grindstaff notes that no Lead Scientist will have the title "Interim Lead Scientist," even with an interim appointment.

While advertisement may constitute part of the process of identifying candidates, active recruitment by ISB members is more likely to be successful.

For several reasons, the ISB recommends that a permanent rather than interim Lead Scientist be sought.

- The coming two-year period is crucial to the continuation of a strong SP. Strong leadership is needed.
- Advertising an interim position might communicate some lingering programmatic uncertainty about CALFED and the SP.

However, if a strong candidate is identified quickly who wants the position on an interim rather than permanent basis, this could be the best solution, particularly if that person would help recruit the successor.

All ISB members have responsibility to identify and speak to at least one candidate for the position as soon as possible. Names, contact information, and rationale for why to consider the candidate should be sent to Mount, cc to Twiss and Norgaard. The candidate need not be from California.

Selection Committee and ISB Lead Scientist Search Subcommittee

The ISB recommends that the Selection Committee not be reconstituted, other than new ISB representation: Mount, Twiss, Norgaard, and Goodwin. These members will also form an ISB subcommittee for Lead Scientist search. Because this is a personnel action, the subcommittee's actions are not governed by the Bagley-Keene Open Meeting Act.

Because the need for a Lead Scientist is urgent, the Lead Scientist search subcommittee will take action, including interviews if possible, before the next ISB meeting. Any recommendations would be communicated to the full ISB before being made to the Selection Committee.

Grindstaff requested that if possible, a candidate be identified so that a recommendation could be made to the Authority for the October 12 meeting.

Public Comments

There were no public comments.

Wrap-Up and Next Steps

CALFED Science Conference

The CALFED Science Conference will take place October 23–25. SP will cover hotel, travel, per diem, and registration costs for all ISB members to attend. Members are strongly recommended to attend to get to know the existing and emerging science.

Public Comments

There were no public comments.